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Public Service Commission of Wisconsin
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July 28, 2022
Public Service Commission
P.O. Box 7854
Madison, WI 53707-7854
Re: Quadrennial Planning Process IV, Docket No. 5-FE-104

On behalf of RMI, we respectfully submit these comments in Docket No. 5-FE-104.

About RMI: RMI (formerly Rocky Mountain Institute) is an independent, non-partisan, non-profit organization whose mission is to transform the global energy system to secure a clean, prosperous, zero-carbon future for all. Since our founding in 1982, we have grown to over 500 staff working on four continents with a global reach. Our initiatives include researching the business models, policies, technologies, and financing mechanisms necessary to advance an equitable clean energy transition.

Introduction & Summary: As the Commission investigates the micro implementation, cost effectiveness and budget for Phase 2 and 3 of the Quadrennial Planning IV proceeding, it can take steps towards modernizing Focus and aligning with Phase 1 decisions. To aid the transition to decarbonization goals and meet Focus' current energy efficiency goals, the PSC should direct Focus to invest in market transformation activities that aid the adoption of modern appliances, like heat pumps, invest in decarbonization strategies, and prioritize efficient, electric appliances. Focus can also use the Quad to implement policies that can help reduce costs to the state by mitigating future gas investments and reducing health and climate impacts. In summary, RMI recommends that the Commission adopt the following alternatives because they will benefit Wisconsin residents and Focus' customer class:

1. **Issue:** Track and State Energy Savings Goals
    a. **Alternative 2:** Establish an overall MMBtu goal without kWh and therm minimum performance requirements (MPR)
2. **Issue:** Time-Varying Value of Energy Efficiency and Renewable Resources
    a. **Alternative 1:** Focus shall investigate opportunities to integrate the time-varying value of energy efficiency and renewable energy resources into program operations
3. **Issue**: Peak Natural Gas
    a. **Alternative 1:** Adopt a winter natural gas peak period definition and begin quantifying and tracking winter natural gas peak demand savings.
4. **Issue:** Avoided Natural Gas Cost
    a. **Alternative 2:** Direct the Evaluation Work Group (EWG) to propose an alternative method for calculating avoided natural gas costs.
5. **Issue:** Resource Acquisition and Market Transformation
    a. **Alternative 2:** Continue emphasizing near-term savings but increase the program's emphasis on market transformation by identifying ways to adapt Focus' existing portfolio to achieve long-term market effects.
    b. **Sub-Alternative A:** Direct Commission staff to propose a heat pump adoption target.
6. **Issue:** Carbon Value
    a. **Alternative 3:** Use a social cost of carbon.

Overall Energy Goals

Alternative 2: Establish an overall MMBtu goal without kWh and therm MPRs

The PSC should track and state energy goals with a fuel neutral method (MMBTUs) to achieve the program's efficiency and decarbonization goals with minimal cost and maximum customer choice. The original intention of Focus was to reduce costs from the energy system and mitigate environmental impacts.[1] The current structure for tracking energy goals, which tracks natural gas and electricity savings separately, does not align with these larger program goals. For example, an air source heat pump will increase total electricity use, but it can still reduce overall energy consumption by eliminating gas use. Additionally, the Quad memo states that siloing the gas and electricity efficiency goals has made it difficult for Focus to reach their therm savings (mainly citing gas price volatility). Tracking total energy savings can help Focus meet these goals in the most cost-effective way possible while ensuring Focus is investing in the actual program goal of maximizing total energy efficiency, instead of siloing savings by fuel type. With the adoption of a fuel-neutral energy metric, Focus must also update the Technical Resource Manual to ensure all measures are accounted for accurately. In retrofit situations, we encourage the program to compare the energy savings of all new appliances with the existing appliance. For new construction, we encourage the baseline scenario to be a mixed fuel building built to current code with minimal efficiency gas appliances. These baselines will ensure Focus in properly accounting for energy savings.

As Focus begins to transition to decarbonization goals (phase 1 decision), a fuel-neutral metric will make it easier for the program to prioritize and meet those goals. They can more easily quantify decarbonization benefits and switch customers to electric appliances when it makes sense, especially as Wisconsin's grid gets more renewables. Without a fuel-neutral metric, Wisconsin will continue to lock-in fossil fuel subsidies. Requiring a specific therm savings goal bars Focus from beginning to ween buildings off the gas system. Switching to a fuel neutral metric will help align Focus with its goals to reduce energy use, carbon emissions, and cost to the program and participants while opening the door for modern technologies that best fit Wisconsinites.

In addition to re-aligning with program goals, fuel-neutral goals will allow customers easier access to the technologies they choose. Wisconsin's current method of energy goal tracking disincentivizes customer choice and ultimately reduces program flexibility blocking better, more modern technologies from entering Wisconsin's market. As the program is currently designed, Focus is not incentivized to help participants who currently use gas to transition to efficient, electric appliances when it makes sense for them. Electrification can help reduce costs to both the participants and the program, aiding Focus in reaching program goals, while also minimizing climate impacts. Electric appliances, such as air source heat pumps, are highly efficient (up to three times more efficient than their gas counterparts) and reduce climate emissions by up to 50%.[2] Fuel-neutral metrics will allow customers and the program to install what is best for the customer while still meeting the program goals cost-effectively.

If Wisconsin adopts a fuel neutral policy, it will join numerous cold climate states in enabling customer choice through fuel switching. Wisconsin's neighbor, Minnesota, allows utilities to complete fuel switching activities on a fuel neutral metric under the state's ECO Act.[3] Other cold climate states, such as

[1]https://focusonenergy.com/sites/default/files/Understanding%20Focus%20on%20Energy's%20Landscape%20and%20History.pdf

[2] https://rmi.org/three-questions-wisconsinites-are-asking-about-heat-pumps/

[3] https://www.mwalliance.org/blog/minnesota-passes-eco-act-modern-and-expansive-update-its-ee-framework

Massachusetts and New York, have updated their approach to energy efficiency with fuel neutral metrics that reflect their goals to reduce energy demand and climate impacts with modern, efficient technology.[4][5]

Time-Varying Value of Energy Efficiency and Renewable Resources

Alternative 1: Focus shall investigate opportunities to integrate the time-varying value of energy efficiency and renewable resources

As renewable energy is increasingly brought online, the carbon and cost savings of electricity use will begin to vary more widely depending on the time of day. Alternative 1 allows Wisconsin to capture the time-varying benefits of energy efficiency and renewable measures to cost-effectively reduce emissions through energy efficiency that is attuned and responsive to changing grid conditions. Program statute supports such an investigation by directing the program to pursue "research and development projects that support sound public policy and provide information to policymakers, program administrators, utilities, and the public about the environmental and economic impacts of energy generation, delivery, and use."[6] Adopting Alternative 1 will further support Phase 1 decisions to increase Focus' analysis and data efforts on decarbonization goals.[7]

Leveraging the variable load of appliances will become increasingly necessary as electric technologies gain market share in the state. Starting to track this data now provides the state a significant opportunity for understanding demand response, electrification, and the opportunity for beneficial load shifting.[8] RMI analysis found that even with the addition of 800,000 heat pumps and no demand response measures, Wisconsin would not hit winter peak capacity.[9] However, significant adoption past 800,000 heat pumps will require deploying energy efficiency and demand response measures in order to mitigate electric grid peaking in the winter especially as electric vehicle adoption contribute to load. As electrification increases in the state, program administrators can use outputs from investigating the time-varying value of energy efficiency resources paired with other resources, like time-of-use rates and smart devices, to guide future efforts to cost effectively mitigate winter peaks and constraints.[10] Accounting for the time-varying value of these technologies also allows Wisconsin to deploy load shifting measures in order to avoid using expensive and dirty peaker power plants. These benefits are particularly true for high performance heat pumps that can compound with time-varying energy efficiency.

[4] https://www.aceee.org/sites/default/files/publications/researchreports/u1905.pdf
[5] https://www.aceee.org/blog-post/2022/07/leading-states-chart-path-cutting-emissions-electrification-pointing-way-peers-1
[6] Wisconsin Admin. Code § PSC 137.05(6)
[7] https://apps.psc.wi.gov/ERF/ERFview/viewdoc.aspx?docid=442095
[8] https://www.aceee.org/sites/default/files/pdfs/u2101.pdf
[9] https://rmi.org/three-questions-wisconsinites-are-asking-about-heat-pumps/
[10] https://www.aceee.org/white-paper/2021/10/energy-efficiency-and-demand-response-tools-address-texas-reliability

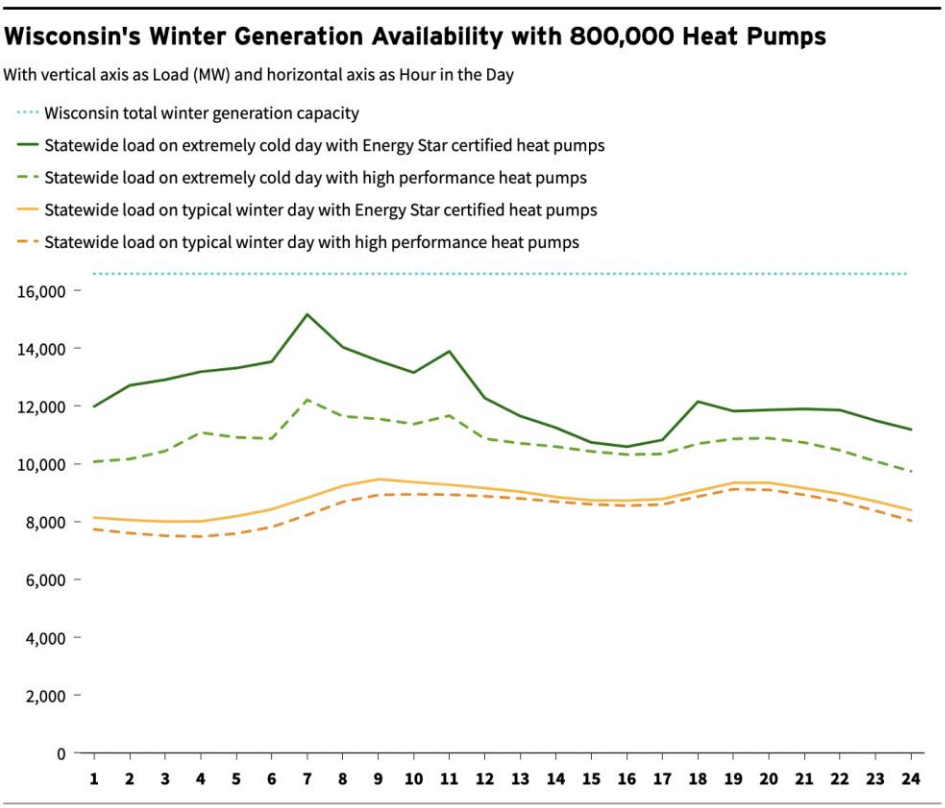

Figure 1: If Wisconsin installed 800,000 Energy Star certified or high-performance heat pumps on a typical or extremely cold winter day, the state would still have 1,000 MW or more electric grid capacity available. High-performance heat pumps have a smaller grid impact and are more effective in Wisconsin's cold climate.

Other states and industries are already leveraging the time-varying value of electric appliances and efficiency measures for long-term grid and decarbonization planning. For example, heat pump water heaters are an especially valuable resource for demand response and flexibility being deployed across the country.[11] Buildings can shift water heating loads to maximize cost and climate savings without requiring customer action and still maintaining comfort. Installing grid-interactive water heaters can also save money. RMI calculates that, if America's nearly 50 million residential electric water heaters went grid-interactive, the system benefits would reach $3.6 billion.[12] If Focus on Energy can invest in understanding the benefits of time-varying resources on costs and climate emissions, it can ensure it is investing in the best technologies for its participants and inform planning and decision making on the pathway toward a decarbonized Wisconsin.

[11] https://www.utilitydive.com/news/utilities-in-hot-water-realizing-the-benefits-of-grid-integrated-water-hea/445241/
[12] https://rmi.org/water-heaters-sexy-tesla/

Natural Gas: Avoided Cost and Peak Natural Gas

Issue: Peak Natural Gas

a. **Alternative 1:** Adopt a winter natural gas peak period definition and begin quantifying and tracking winter natural gas peak demand savings.

Issue: Avoided Natural Gas Cost

a. **Alternative 2:** Direct EWG to propose an alternative method for calculating avoided natural gas costs.

Adopting a natural gas peak period definition and improving the quantification of avoided natural gas costs will allow the PSC to accurately weigh alternatives to gas infrastructure investments. In addition to the avoided commodity costs and peak savings, the PSC should also quantify the avoided cost of natural gas infrastructure attributable to efficiency measures. Understanding avoided costs of both the commodity and infrastructure will ensure that Focus can accurately quantify the cost impacts to residents and align with long term decarbonization strategies.

As Wisconsin continues to experience volatile and rising gas prices, it is critical to accurately understand natural gas commodity impacts on customers. Numerous utilities have recently announced that Wisconsin ratepayers can expect to see their gas bills increase, meaning it will be harder for Wisconsinites to keep the heat on in their homes[13] Electrification and energy efficiency can help participants mitigate the impacts of gas price spikes. Efficiency programs should thus accurately reflect natural gas avoided costs and properly value the impacts of increasing natural gas commodity prices. The proposed alternatives will inform future Commission decisions with a clear understanding of the impacts on natural gas customers by quantifying: (1) the cost impacts of peak natural gas demand, (2) the cost savings of avoided natural gas purchases, and (3) the avoided infrastructure costs of transitioning customers from, or lessening reliance on, the natural gas system.

Alongside understanding natural gas commodity impacts, the PSC should investigate infrastructure costs to better inform future Focus programs. The original purpose of the Focus on Energy program was to mitigate costs for customers.[14] Despite gas consumption in Wisconsin remaining relatively flat, the state continues to invest in and expand gas infrastructure.[15] The 2019-2021 Biennial PSC report, for example, outlines WEPCO's $186 million gas line extension and repair project. Non-pipe solutions such as energy efficiency, demand response, and electrification can support mitigating further investment in the energy system such as capacity upgrades, pipe replacement, and expansion of the gas system.[16] As the Commission investigates the avoided costs and peak natural gas issues, the PSC should consider how energy efficiency and electrification can reduce the need for or avoid gas infrastructure investments, save Wisconsinites money, and de-risk future stranded assets. An example of gas infrastructure investments that may be able to be avoided in the future include the recently approved $370 million gas storage site.[17] Including gas infrastructure avoided costs will help the Commission ensure that Focus works to reduce costs for the ratepayers funding Focus on Energy.

[13] https://www.wpr.org/wisconsin-utilities-warn-customers-may-feel-pinch-surging-natural-gas-prices-winter
[14] https://focusonenergy.com/about
[15] https://rmi.org/insight/the-impact-of-fossil-fuels-in-buildings/
[16] https://www.coned.com/en/business-partners/business-opportunities/non-pipeline-solutions
[17] https://madison.com/news/local/environment/regulators-approve-370m-natural-gas-storage-project-despite-concerns-of-fossil-fuel-investment/article_024bd604-9586-5620-ad58-4fdad99e526f.html

Resource Acquisition and Market Transformation

Alternative 2: Continue emphasizing near-term savings but increase the program's emphasis on market transformation by identifying ways to adapt Focus' existing portfolio to achieve long-term market effects. **Sub-Alternative A:** Direct Commission staff to propose a heat pump adoption target in Phase III of Quad IV Planning.

Shifting the program's focus towards market transformation and heat pump adoption targets will help the program meet efficiency and decarbonization goals while also ensuring residents have affordable access to the best modern technology. Market transformation is listed among the top priorities for Focus, as enumerated in statute.[18] Alternative 2 best addresses these statutory requirements and will allow Focus to be a leader and market energizer by helping identify and support the best technologies for Wisconsin. As noted already in this docket, Focus has already proven itself to be an effective market transformation actor. In 2005, the program helped launch the LED market, bringing the current market share of LEDs to 87%.[19] By once again acting as a market leader, Focus on Energy will drive down prices for the best technologies, develop the necessary contractor workforce, and benefit participants.

When identifying technologies for market transformation activities, Focus on Energy should include building electrification appliances, such as heat pumps. Heat pumps are effective in cold climates, reduce climate emissions, and are far more efficient than gas appliances. Wisconsin-specific research has found heat pumps can reduce emissions compared to gas and propane furnaces up to 50% over the lifetime of the appliance.[20]

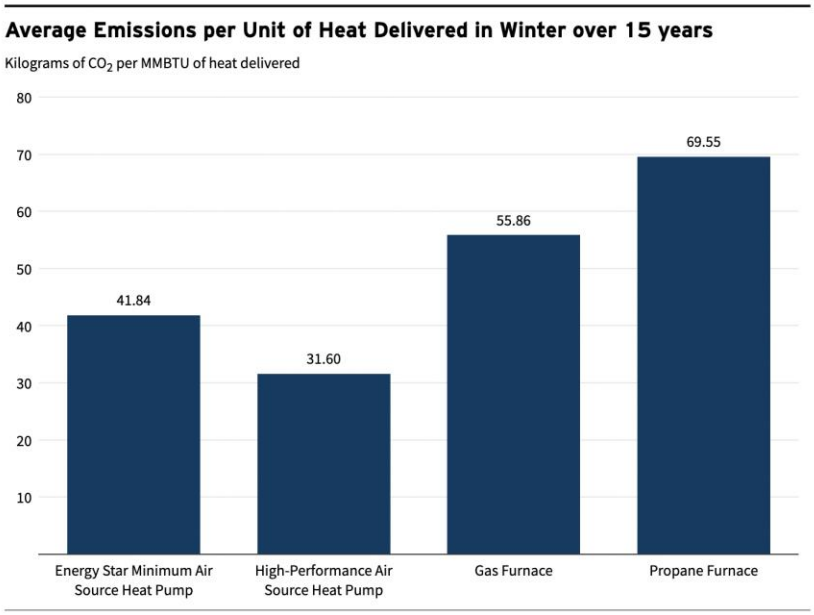

Figure 2: Energy Star certified and High-Performance heat pumps are expected to produce fewer emissions over the lifetime of the appliance than an efficient gas or propane furnace.

[18] Wis. Admin. Code § PSC 137.05(11)
[19] https://apps.psc.wi.gov/ERF/ERFview/viewdoc.aspx?docid=442095
[20] https://rmi.org/three-questions-wisconsinites-are-asking-about-heat-pumps/

Sub Alternative A, setting a heat pump target, will develop tangible targets for Focus on Energy's market transformation goals. Other cold climate states have already successfully developed heat pump targets to build trust in and develop the cold climate heat pump market. Maine has set a target of having 245,000 homes install heat pumps by 2030 (48% of housing stock), and Colorado set a 200,000-home target by 2030 (12% of the housing stock).[21] With other cold climate states leading the charge, Wisconsin can be confident that adding a heat pump target will help Focus meet its market transformation goals in the heat pump market in a manner that best serves participants.

To ensure participants can shift away from furnace appliances and take advantage of heat pumps for both heating and cooling, Focus on Energy must ensure that any heat pump target is accompanied by incentives that support heat pumps that meet the full load of the home. Incentive amounts must be higher for those who are installing heat pumps to meet heating loads alongside cooling. Without higher incentives, people will not be able to afford the upfront costs of heat pumps sized for both heating and cooling loads, and any market transformation activities may be unsuccessful. If customers are sizing their heat pumps to just meet their cooling load, then they will still rely on fossil fuels for heating, which does not provide the carbon savings a heat pump can deliver. ConEd, a utility in New York, provides an example of a utility already incentivizing building owners who purchase a heat pump that meets the total building load, not just the cooling load, with larger rebates[22]

Carbon Value

Alternative 3: Use a social cost of carbon.

Focus on Energy should use the social cost of carbon (SCC), as well as the social cost of methane (SCM), to ensure the program is more accurately estimating the total economic costs Wisconsinites are facing from greenhouse gas emissions and the benefits that efficiency and electrification provide. During Phase 1 of the Quad, the PSC determined Focus on Energy would begin transitioning to align with decarbonization goals. To best support this decision, the PSC should adopt the SCC to ensure that broader societal and direct economic costs of greenhouse gas emissions are accounted for. In doing so, Wisconsin would join 14 other states that have included the SCC in their policies and utility programs.[23] These 14 states use SCC values that vary from the federal SCC ($51/ton) to values well over $100/ton which are supported by significant peer-reviewed research quantifying the costs of climate change.[24]

Alongside the SCC, the PSC should include the social cost of methane. Methane is 80 times more climate intensive than carbon dioxide and therefore must be included in all cost-effectiveness tests to accurately estimate the cost impacts of greenhouse emissions.[25] Methane leaks are an immediate climate risk – national studies estimate that approximately 2.2% of total U.S. gas consumption is lost through methane leaks.[26] [27] Methane emissions are particularly relevant for Wisconsin, as illustrated by the September 2021 plume reported to have released at least 30 tons of methane per hour.[28] These emissions were partially attributed

[21] https://rmi.org/heat-pumps-a-practical-solution-for-cold-climates/
[22] https://saveenergy.ny.gov/NYScleanheat/assets/pdf/NYS-Clean-Heat-Program-Manual.pdf
[23] https://costofcarbon.org/states
[24] https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M293/K833/293833387.PDF
[25] https://www.edf.org/climate/methane-crucial-opportunity-climate-fight
[26] https://rmi.org/insight/regulatory-solutions-for-building-decarbonization/
[27] https://rhg.com/research/preliminary-us-emissions-2019/
[28] https://www.bloomberg.com/news/articles/2021-09-17/wisconsin-launches-probe-into-methane-plume-spotted-from-space

to natural gas infrastructure leaks and contribute to costly health and environmental impacts on Wisconsinites. In addition to accelerating the impacts of climate change, methane emissions drive poor outdoor air quality, resulting in worsened health outcomes that Focus on Energy should be accounting for in evaluating efficiency measures.[29] To account for the significant impacts of methane emissions on health and the climate, Focus should adopt the SCM either as its own metric or as part of the SCC by using the 20-year global warming potential to calculate the carbon equivalency of methane. Wisconsin can look to examples from other states that have already incorporated the SCC and SCM for guidance. As an illustrative example, Xcel Energy, a utility operating in several states including Wisconsin and Colorado, is already required to use the social cost of methane and carbon for its Colorado business.[30]

If Focus on Energy does not attempt to estimate the social impacts of greenhouse gas emissions, the program may inaccurately claim savings and risks incentivizing technologies that do not align with the best interests of program participants.

Conclusion

To ensure Focus on Energy is aligned with Phase 1 decisions and the program's decarbonization and efficiency goals, the PSC must adopt policies that align with those goals. RMI's suggested alternatives will ensure the program is positioned to transition towards decarbonization goals, by energizing the heat pump market and mitigating unnecessarily expensive natural gas infrastructure costs. Alongside helping reach Focus program goals, these policies will ensure Focus participants have access to modern, affordable appliances that will lessen the impacts of climate change and protect the health of local communities.

Sincerely,

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[29] https://www.lung.org/blog/methane-gas-pollution
[30] https://energynews.us/2021/08/02/social-cost-of-methane-changes-the-equation-for-colorado-utility-policy/